

Application No. 10/696,653
Amendment Dated January 25, 2007
Reply to Office Action of November 2, 2006

REMARKS/ARGUMENTS

By this Amendment, claim 1 is canceled, claims 2-5 and 9-21 are amended and claims 22-30 are added. Claims 2-30 are pending.

Favorable reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

The Examiner sets forth that claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Applicants submit that a Preliminary Amendment was filed in the instant application on September 20, 2006. The Preliminary Amendment of September 20, 2006 set forth the addition of new claims 22-34. However, in the instant Office Action, the Examiner addresses only originally filed claims 1-21. Accordingly, the Applicants assume that the claims set forth in the Preliminary Amendment were not entered into the application by the Patent Office.

Therefore, the Applicants will not proceed with prosecution of claims 22-34 as set forth in the forgoing Preliminary Amendment. Furthermore, new claims added by the Applicants in the instant Amendment are numbered consecutively beginning at claim 22.

Additionally, the Examiner sets forth that claims 5-21 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, 2nd paragraph, set forth in the Office Action and to include all of the limitations of the base claim and any intervening claims.

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Accordingly, the Applicants believe that the Examiner has found allowable subject matter in originally filed dependent claims 5, 13 and 15 if the rejections under 35 U.S.C. 112, 2nd paragraph are overcome. Therefore, originally filed dependent claims 5, 13 and 15 have been substantially rewritten as new independent claims 24, 27 and 29, respectively, including the limitations of the base claim and any intervening claims. The Applicants therefore submit that new claims 22, 27 and 29 are allowable for the forgoing reasons. Additionally, the claims 25, 26, 28 and 30 depend directly or indirectly from new independent claims 25, 26, 28 and 30 are allowable for the same reasons. Independent claim 1 has been amended and rewritten as new independent claim 22.

Regarding claim 1, the Examiner sets forth that the preamble of the claim sets the scope of the claim to be processing an image of an object *in order to perform* a procedure on an object. According to the Examiner, performing the procedure does not appear to be encompassed and this contrasts with the body of the claim in which *performing said procedure* on an object is being positively claimed. The Applicants believe that claim 1 has been amended accordingly, as the Applicants understand the Examiner's rejection.

Additionally, the Examiner further sets forth that claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cambier et al. (US 6,532,298).

The Examiner believes that Cambier et al. discloses applying a plurality of light beams using an array of light sources 202 and providing a corresponding plurality of electrical signals representative of the reflected light beams using beams using imager 200 and that one of

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ordinary skill in the art would have found it obvious to determine image quality metrics using the teaching in Cambier et al. because the high-pass filter that also functions as a band-pass filter, selecting only a high range of spatial frequencies in all orientations is modifiable to select metric frequency ranges based on the disclosure of the filter. The filter's center, corresponds to very low spatial frequencies. The Examiner further believes that the low frequencies provide little information in computing a focus score, and only relatively high frequencies contribute significantly to the computation of a focus score. According to the Examiner, one of ordinary skill in the art would be motivated by this teaching to adjust the filter to determine a frequency from a plurality of differing frequencies in accordance with a selected image to provide a determined frequency and to determine a plurality of image quality metrics in accordance with the frequency distributions of a plurality of differing frequencies.

The Examiner further sets forth that the prior art made of record and not relied upon is considered pertinent to applicants' disclosure: Wildes et al. (US 5,571,836) disclose an input image that represents a relatively high-resolution eye image that is applied as an input to an iris localization means from an iris acquisition means according to the Examiner. The Examiner further believes that a first data processing step averages and reduces the input image by convolving the date defining the input image with a low-pass Gaussian filter that spatially averages and reduces high frequency noise.

The Applicants submit that Cambier teaches a handheld device for obtaining images of an iris and identifying a person according to the iris images. The iris acquisition device taught

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by Cambier has a front surface for obtaining the image, a lense in front of the front surface of the iris acquisition means and a mirror disposed on one side of the lense. Representations of previously obtained iris images are stored in a memory within the device taught by Cambier for extraction and comparison at the time a person is being identified by the handheld device.

In order to obtain an image for comparison with an extracted template, the Cambier system focuses and defocuses an image of the iris of the person to be identified and performs a number of mathematical operations upon signals representative of the images of the iris obtained in this manner. A quality of focus metric is determined for the images. When an image having a satisfactory quality of focus is obtained, the comparison with an extracted image taught by Cambier can proceed by comparing the focused image obtained in this manner with an extracted representation of a previously obtained image.

Significantly, it must be noted that Cambier teaches applying only a single white beam of light to the eye. While the white beam may, inherently, contain all frequencies of light, it is still a single beam. This must be distinguished from applying a plurality of differing light beams, wherein each light beam of the differing light beams has a differing selected frequency.

The Applicants' invention is a method for optimizing electromagnetic energy in which the light beams of a plurality of light beams of differing frequencies are individually applied to the eye. Thus, images can be optimized to emphasize selected features of the eye over other features, and thereby selectively visualize selected features within the eye. The frequencies of light that best visualize the selected features can be recorded and applied to the eye at a later time

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during a diagnosis or procedure. This permits the selected features to be brought into view and out of view as convenient at different times during a diagnosis for a procedure by again applying the recorded frequencies.

Accordingly, the Applicants' new claim 22 sets forth a method for optimizing electromagnetic energy in a system for processing an image of an object for performing a procedure on an object, including selecting a plurality of differing frequencies of incoherent light to provide a plurality of differing selected frequencies and individually applying differing light beams of a plurality of differing light beams to an object wherein each differing light beam has a respective selected frequency of the plurality of selected frequencies to provide a plurality of differing applied light beams, each differing applied light beam having its respective selected frequency. New claim 22 also recites reflecting the plurality of differing applied light beams from the object to provide a plurality of differing reflected light beams, each differing reflected light beam having its respective selected frequency, providing a corresponding plurality of electrical signals representative of the reflected light beams of the plurality of differing reflected light beams and determining a corresponding plurality of image quality metrics in accordance with the plurality of electrical signals. Determining a corresponding plurality of images in accordance with the plurality of image quality metrics, determining an image of the plurality of images in accordance with an image criterion to provide a determined image and determining the respective selected frequency of the plurality of selected frequencies in accordance with the

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determined image to provide a determined frequency are also required. The procedure is performed on an object in accordance with the determined frequency.

Cambier does not teach providing a plurality of differing selected frequencies and individually applying differing light beams of a plurality of differing light beams to an object wherein each differing light beam has a respective selected frequency of said plurality of selected frequencies as set forth in the Applicants' new independent claim 22.

Rather, Cambier sets forth applying a single white light to an object to provide a reflected light beam, providing an image according to the reflected light beam, focusing and defocusing the image, and determining focus metrics until an optimum focus is obtained. While the focusing and defocusing of the image may selectively attenuate frequencies in the image, and arguably thereby provide "differing frequencies," the differing frequencies taught by Cambier are not applied to the object. Rather, they are merely mathematical representations of a reflected light beam after it has reflected from the object.

Thus, Cambier does not teach providing a plurality of differing selected frequencies and individually applying differing light beams of a plurality of differing light beams to an object wherein each differing light beam has a respective selected frequency of said plurality of selected frequencies as set forth in the Applicants' new independent claim 22.

For at least the reasons set forth above, it is respectfully submitted that new independent claim 22 and the claims depending therefrom distinguish over Cambier and that the above-identified application is in condition for allowance. Favorable reconsideration and prompt

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allowance of the claims are respectfully requested.

Should the Examiner believe that anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

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